

IN THE CLAIMS:

Please amend Claims 1-3, 5 and 7-9 and add new Claims 11-13 as follows.

1. (Currently Amended) A radiation imaging apparatus comprising:  
radiation detection means including radiation detection elements for  
detecting radiations which have penetrated an object as electric signals, said elements arranged in  
a two-dimensional array; and

image display control means for producing a radiation image of the  
object detected as the electric signals with said radiation detection means as continuous images  
including a plurality of frames, said image display control means switching a tube voltage of a  
radiation source for emitting the radiations between a first voltage at a time of producing of (2m  
-1)<sup>th</sup> odd image images and another a second voltage at a time of producing 2mth even images  
image, where m is a natural number, said image display control means further controlling a  
display device to continuously display a plurality of processed image images as a dynamic image,  
each of the processed image images being obtained by performing a subtraction process between  
an odd image of the (2m-1)th odd image images and an even image of the 2mth even image  
images, wherein the even image is derived in succession to the odd image.

2. (Currently Amended) A radiation imaging apparatus according to  
claim 1, wherein said image display control means performs the subtraction process after

performing a gradation conversion process or an edge enhancement process to the  $(2m-1)^{\text{th}}$  odd image or the  $2m^{\text{th}}$  even image as occasion demands.

3. (Currently Amended) A radiation imaging apparatus according to claim 1 ~~or 2~~, wherein said radiation detection elements include wavelength conversion bodies for converting the radiations into visible light and photoelectric conversion elements for converting the visible light converted by said wavelength conversion bodies.

4. (Original) A radiation imaging apparatus according to claim 3, wherein said wavelength conversion bodies each include a principal component selected from the group consisting of  $\text{Gd}_2\text{O}_2\text{S}$ ,  $\text{Gd}_2\text{O}_3$ ,  $\text{CsI}$ .

5. (Currently Amended) A radiation imaging apparatus according to claim 3 ~~or 4~~, wherein said photoelectric conversion elements are MIS type sensors or PIN type sensors, both using amorphous silicon semiconductor.

6. (Original) A radiation imaging apparatus according to claim 5, wherein each of said MIS type sensors is configured to include a first metal thin film formed as a lower part electrode, an insulating layer formed on said first metal thin film layer for obstructing electrons and holes, said insulating layer made from amorphous silicon nitride, a photoelectric conversion layer formed on said insulating layer, said photoelectric

conversion layer made from amorphous silicon hydride, an N type injection obstruction layer formed on said photoelectric conversion layer for obstructing injections of the holes, and a transparent electrode layer formed on said injection obstruction layer as an upper electrode or a second metal thin film layer formed on said injection obstruction layer, and

said radiation imaging apparatus supplies an electric field to each of said MIS type sensors in a direction to lead the holes from said photoelectric conversion layer to the second metal thin film layer in a refresh mode, and

said radiation imaging apparatus supplies an electric field to each of said MIS type sensors in a direction in which the holes generated by the radiations, which have entered said photoelectric conversion layer, are stayed at said photoelectric conversion layer and the electrons are led to said second metal thin film layer in a photoelectric conversion mode, and further

said radiation imaging apparatus detects the holes accumulated in said photoelectric conversion layer in said photoelectric conversion mode or the electrons led to said second metal thin film layer as light signals.

7. (Currently Amended) A radiation imaging apparatus according to claim 1 or 2, wherein

said radiation detection elements are made from a material selected from the group consisting of lead iodide, mercuric iodide, selenium, cadmium telluride, gallium

arsenide, gallium phosphide, zinc sulfide and silicon, said material absorbs the radiations to convert the absorbed radiations into the electric signals directly.

8. (Currently Amended) A radiation imaging system comprising:  
a radiation source for emitting radiations; and  
a radiation imaging apparatus including radiation detection means having radiation detection elements for detecting the radiations, which have been emitted from said radiation source and have penetrated an object, as electric signals, said elements arranged in a two-dimensional array; and image display control means for producing a radiation image of the object detected as the electrical signals with said radiation detection means as continuous images including a plurality of frames, said image display control means switching a tube voltage of said radiation source for emitting the radiations between a first voltage at a time of producing a  $(2m-1)$ th odd image images and another a second voltage at a time of producing a  $2m$ th even image images image, where  $m$  is a natural number, said image display control means further controlling a display device to continuously display a plurality of processed image images as a dynamic image, each of the processed image images being obtained by performing a subtraction process between an odd image of the  $(2m-1)$ th odd image images and an even image of the  $2m$ th even image images, wherein the even image is derived in succession to the odd image.

9. (Currently Amended) A radiation imaging method comprising the steps of:

detecting radiations which have penetrated an object as electric signals using radiation detection elements arranged in a two-dimensional array; and producing a radiation image of the object detected as the electric signals at the step of detecting radiations as continuous images including a plurality of frames, and switching a tube voltage of radiation source for emitting the radiations between a first voltage at a time of producing a  $(2m-1)$ th odd image images and another a second voltage at a time of producing a  $2m$ th even images image, where  $m$  is a natural number, and further controlling a display device to continuously display a processed image as a dynamic image, each of the processed image images being obtained by performing a subtraction process between an odd image of the  $(2m-1)$ th odd image images and an even image of the  $2m$ th even image images, wherein the even image is derived in succession to the odd image.

10. (New) A radiation imaging apparatus comprising:  
radiation detection means including radiation detection elements for detecting radiations which have penetrated an object as electric signals; and image display control means for producing a radiation image of the object detected as the electric signals with said radiation detection means as continuous images including a plurality of frames, said image display control means switching an energy of radiation between a first energy at a time of producing odd images and a second energy at a time of producing even images, said image display control means further controlling a display device to continuously display a plurality of processed images as a dynamic image, each of the

processed images being obtained by performing a subtraction process between an odd image of the odd images and an even image of the even images, wherein the even image is derived in succession to the odd image.

11. (New) A radiation imaging system comprising:  
a radiation source for emitting radiations; and  
a radiation imaging apparatus including radiation detection means having radiation detection elements for detecting the radiations, which have been emitted from said radiation source and have penetrated an object, as electric signals, said elements arranged in a two-dimensional array; and image display control means for producing a radiation image of the object detected as the electric signals with said radiation detection means as continuous images including a plurality of frames, said image display control means switching an energy of radiation between a first energy at a time of producing odd images and a second energy at a time of producing even images, said image display control means further controlling a display device to continuously display a plurality of processed images being obtained by performing a subtraction process between an odd image of the odd images and an even image of the even images, wherein the even image is derived in succession to the odd image.

12. (New) A radiation imaging system according to claim 11, wherein  
said radiation source comprises a radiation tube for emitting the radiation in pulse; and

a radiation power source for applying to the radiation source a tube voltage, which is switched between a first value for producing the odd image and a second value for producing the even image.

13. (New) A computer program for operating a computer to execute display of a movie image on a display apparatus based on a plurality of images derived successively by subjecting to subtraction processing a first image derived by a first energy radiation transmitted through an object and a second image derived by a second energy radiation transmitted through the same object, among a plurality of images of successive frames detected by radiation detecting means for detecting as an electric signal the radiation transmitted through the object.